Association of Opioid Type with Opioid Consumption after Surgery in Michigan

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OPEN — OPIOID PRESCRIBING ENGAGEMENT NETWORK

MEDICAL SCHOOL — UNIVERSITY OF MICHIGAN

INTRODUCTION

- To reduce over-prescription of opioids, institutions across the US have released opioid prescribing recommendations for surgical procedures.[1-5]
- In October 2017, Michigan OPEN released postoperative opioid prescribing guidelines for 9 different surgical procedures.
- In January 2019, these guidelines were simplified to increase provider compliance and facilitate around-the-clock dosing of acetaminophen.

Changes in Michigan OPEN Prescribing Recommendations

October 1, 2017-December 31, 2018
Recommended prescribing 50% more 5 mg tablets of hydrocodone than 5 mg tablets of oxycodone to adjust for potency differences

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January 1, 2019-May 31, 2019
Recommended the same number of 5 mg hydrocodone tablets as 5 mg oxycodone tablets for each procedure

- **Hypothesis:** Despite the known differences in potency, patients prescribed hydrocodone consume a similar number of 5 mg tablets as patients prescribed oxycodone after surgery.

METHODS

Study Cohort

Michigan Surgical Quality Collaborative Database January 1, 2018-May 31, 2019

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6,842 Eligible Patients
- Opioid-naïve adults
- Underwent 1 of 9 surgical procedures in guidelines
- Prescribed 5 mg hydrocodone or 5 mg oxycodone
- No complication, readmission, or additional surgery within 30 days

Study Design

Primary Explanatory Variable:
Type of opioid prescribed (oxycodone vs. hydrocodone)

↓ *Risk adjustment*[ǂ]

Primary Outcome:
Number of 5 mg tablets consumed
(Meaningful difference defined as 5 pills or more *a priori)*

Secondary Outcomes:
Highly satisfied (yes/no)
Pain score (1-4 scale)
Refill(s) (yes/no)

ǂAnalyses were risk-adjusted for age, sex, race, tobacco use, cancer, obesity, ASA class, surgical procedure, elective vs. emergent status, inpatient vs. outpatient status, and the number of opioid pills prescribed in the initial postoperative prescription. ASA was excluded for model explaining pain, as one ASA category predicted the outcome perfectly. Because number of refill events were low, only age, race, ASA class, inpatient vs. outpatient status, procedure group, and number of pills prescribed were included in refill models.

RESULTS

Patients consumed fewer pills than prescribed in both the oxycodone and hydrocodone groups.

Table 1. Patient Characteristics, No. (%) or mean (SD)

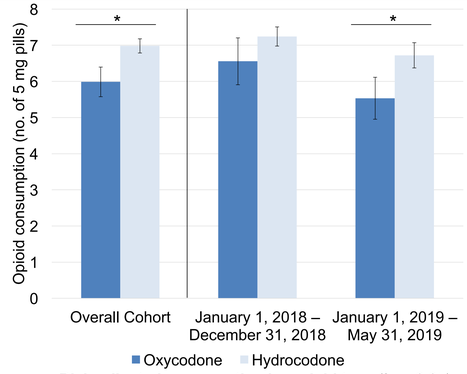
Characteristic	Overall Cohort (N = 6,842)
Age 45-64	2850 (41.7%)
Female	3777 (55.2%)
White Race	6017 (87.9%)
Tobacco Use	1278 (18.7%)
Cancer	386 (5.6%)
Obese	3095 (45.2%)
ASA Class 2-3	5977 (87.4%)
Elective Surgery	5372 (78.5%)
Inpatient Surgery	3732 (54.6%)
Procedure	
0-10 pills recommended	4815 (70.4%)
0-15 pills recommended	359 (5.3%)
0-20 pills recommended	738 (10.8%)
0-25 pills recommended	930 (13.6%)
Number of pills prescribed	16 (7.28)
Hydrocodone	5774 (84.4%)

Table 2. Unadjusted opioid prescribing and consumption by opioid type

	Hydrocodone	Oxycodone
Pills Prescribed	17 (7.05)	14 (8.06)
Pills Consumed	7 (7.51)	6 (7.54)

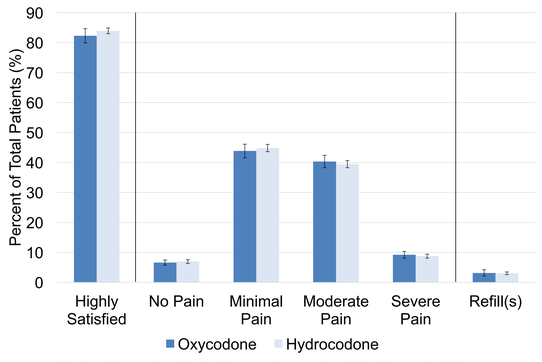
Numbers reported in mean (SD)

Patients prescribed hydrocodone consumed a similar number of 5 mg tablets as patients prescribed oxycodone after surgery.



Risk-adjusted consumption by opioid type (*p < 0.05)

There were no differences in satisfaction, pain, or refills between patients prescribed oxycodone and patients prescribed hydrocodone.



Risk-adjusted satisfaction, pain, and refill(s) by opioid type

RESULTS

- Patients consumed fewer pills than prescribed in both the oxycodone and hydrocodone groups.
- There was not a clinically significant difference in the number of pills consumed in the 30 days after surgery between those patients prescribed hydrocodone versus oxycodone.
- The type of opioid prescribed was not associated with a difference in patient-reported satisfaction, pain score, or refills.

CONCLUSIONS

- Patients prescribed hydrocodone, as opposed to oxycodone, for their postoperative pain relief do not need to be prescribed additional pills.
- Institutional postoperative opioid prescribing guidelines may recommend the same number of 5 mg pills of oxycodone or hydrocodone without sacrificing patient-reported outcomes.
- Future studies may investigate how postoperative opioid prescribing guidelines at institutions across the country impact prescribing habits

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